Amendments to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application.

Listing of Claims:

1-78. (canceled)

79. (previously presented) A method, performed by one or more server devices, the method comprising:

storing, in a memory of the one or more server devices, search query-search document associations, each search query-search document association representing a one-to-one pairing of an issued search query and a search document retrieved based on the issued search query;

receiving, by one or more processors of the one or more server devices, a search query;

identifying, by one or more processors of the one or more server devices, a set of search result documents using the received search query;

forming, by one or more processors of the one or more server devices, a plurality of clusters of search documents, of the stored search query-search document associations, that match the identified set of search result documents;

selecting, by one or more processors of the one or more server devices, at least one of the plurality of clusters; and

formulating, by one or more processors of the one or more server devices, a search query refinement suggestion based on an issued search query of a search query-

search document association associated with a search document of the selected at least one of the plurality of clusters.

80. (canceled)

81. (currently amended) The method of claim 79, further comprising:

assigning weights to the search query-search document associations in the database based on relevancies of the search documents to the issued search queries in the search query-search document associations; and

storing the weights ~~in the database~~.

82. (previously presented) The method of claim 81, where the formulating the search query refinement suggestion further comprises:

computing term vectors using terms in the issued search queries of the search query-search document associations and the assigned weights.

83. (previously presented) The method of claim 82, where the formulating the search query refinement suggestion further comprises:

normalizing the term vectors; and

forming the clusters based on distances of each of the normalized term vectors from a common origin.

84. (previously presented) The method of claim 83, where the formulating the search query refinement suggestion further comprises:

multiplying, by a constant, those of the normalized term vectors that include constituent terms with the received search query to downwardly weight the constituent terms to produce an independence of the clusters from the terms of the received search query.

85. (previously presented) The method of claim 83, further comprising:

assigning a relevance score to the at least one search result document,

where the formulating the search query refinement suggestion further includes:

ranking the clusters based on the relevance score and a number of identified search documents in the clusters.

86. (previously presented) The method of claim 85, where the selecting at least one of the clusters comprises:

selecting at least one of the clusters based on the ranking.

87. (previously presented) The method of claim 86, where the formulating the search query refinement suggestion further comprises:

computing a centroid for each of the selected clusters; and

determining a score for each unique search query in the selected at least one of the clusters based on the centroids.

88. (previously presented) The method of claim 87, where the computing the score for each of the unique search queries comprises:

multiplying a frequency of the issued search queries in the search query-search document associations in the selected at least one of the clusters times a length of a distance vector measured from the term vectors of the issued search queries in the search query-search document associations to the centroids of the selected at least one of the clusters.

89. (previously presented) The method of claim 87, where the formulating the search query refinement suggestion further comprises:

designating a name to each of the selected at least one of the clusters based on the computed scores of the unique search queries of the selected at least one of the clusters.

90. (previously presented) The method of claim 89, where the formulating the search query refinement suggestion further comprises:

comparing the computed scores of the unique search queries of the named clusters to a threshold; and

selecting those cluster names with the computed score that exceeds the threshold to obtain the search query refinement suggestions.

91. (previously presented) The method of claim 90, where the formulating the search query refinement suggestion further comprises:

sorting the obtained search query refinement suggestion among a group of search query refinement suggestions based on a relevance score assigned to each of the search result documents corresponding to the identified search documents associated with the named clusters and a number of the identified search documents in the named clusters to obtain a sorted set of search query refinement suggestions.

92. (previously presented) The method of claim 91, further comprising:

presenting the sorted search query refinement suggestions to a user.

93. (previously presented) The method of claim 91, further comprising:

augmenting the sorted set of search query refinement suggestions with supplemental queries that include one or more of the terms of the search query and negated forms of all terms appearing in the set of search query refinement suggestions, but not appearing in the search query; and

presenting the augmented search query refinement suggestions to a user.

94. (previously presented) A system comprising:

means for storing search query-search document associations in a memory, each search query-search document association representing a one-to-one pairing of a stored search query and a search document retrieved based on the stored search query;

means for receiving a search query;

means for identifying a set of search result documents using the received search query;

means for forming a plurality of clusters of search documents, of the search query-search document associations, that are associated with the identified set of search result documents;

means for selecting at least one of the plurality of clusters; and

means for formulating a search query refinement suggestion based on a stored search query associated with a search document of the selected at least one of the plurality of clusters.

95. (previously presented) A computer-readable memory device to store instructions executable by at least one processor to cause the at least one processor to:

store search query-search document associations, each search query-search document association representing a one-to-one pairing of an issued search query and a search document retrieved based on the issued search query;

receive a search query;

identify a set of search result documents using the received search query;

form a plurality of clusters of search documents, of the stored search query-search document associations, that are associated with the identified set of search result documents;

select at least one of the plurality of clusters; and

formulate a search query refinement suggestion based on an issued search query associated with a search document of the selected at least one of the plurality of clusters.

96. (previously presented) A method, performed by one or more server devices, the method comprising:

storing, in a memory of the one or more server devices, a plurality of query-document associations, each query-document association including a one-to-one pairing of an issued search query and a stored search document that was retrieved based on the issued search query;

receiving, by one or more processors of the one or more server devices, a search query from a client device;

identifying, by one or more processors of the one or more server devices, a set of search result documents using the received search query;

identifying, by one or more processors of the one or more server devices, search result documents in the identified set of search result documents that match stored search documents;

forming, by one or more processors of the one or more server devices, a plurality of clusters of the search documents, of the stored plurality of query-document associations, that match the search result documents;

selecting, by one or more processors of the one or more server devices, at least one of the plurality of clusters;

identifying, by one or more processors of the one or more server devices, for a stored search document of the selected at least one of the plurality of clusters, a query-document association in the plurality of query-document associations; and

formulating, by one or more processors of the one or more server devices, a search query refinement suggestion for the received search query based on an issued search query of the identified query-document association.

97. (canceled)

98. (previously presented) The method of claim 96, further comprising:

assigning weights to the stored query-document associations based on relevancies of the search documents to the issued search queries in the query-document associations; and

storing the assigned weights.

99. (previously presented) The method of claim 98, where the formulating the search query refinement suggestion further comprises:

computing term vectors using terms in the issued search queries of the identified query-document associations and the assigned weights.

100. (previously presented) The method of claim 99, where the formulating the search query refinement suggestion further comprises:

normalizing the term vectors; and

forming clusters of the search documents in the identified query-document associations based on distances of each of the normalized term vectors from a common origin.

101. (previously presented) The method of claim 100, where the formulating the search query refinement suggestion further comprises:

multiplying, by a constant, those of the normalized term vectors that include constituent terms with the received search query to downwardly weight the constituent terms to produce an independence of the clusters from the terms of the received search query.

102. (previously presented) The method of claim 100, further comprising:

assigning a relevance score to the search result documents,

where the formulating the search query refinement suggestion further includes:

ranking the clusters based on the relevance score and a number of search documents in the clusters.

103. (previously presented) The method of claim 102, where the formulating the search query refinement suggestion further comprises:

selecting ones of the clusters based on the ranking.

104. (previously presented) The method of claim 103, where the formulating the search query refinement suggestion further comprises:

computing a centroid for each of the selected clusters; and

determining a score for each unique search query in the selected clusters based on the centroids.

105. (previously presented) The method of claim 104, where the computing the score for each of the unique search queries comprises:

multiplying a frequency of the issued search queries in the identified query-document associations in the selected clusters times a length of a distance vector measured from the term vectors of the issued search queries in the identified query-document associations to the centroids of the selected clusters.

106. (previously presented) The method of claim 104, where the formulating the search query refinement suggestion further comprises:

designating a name to each of the selected clusters based on the computed scores of the unique search queries of the selected clusters.

107. (previously presented) The method of claim 106, where the formulating the search query refinement suggestion further comprises:

comparing the computed scores of the unique search queries of the named clusters to a threshold; and

selecting those cluster names that exceed the threshold to obtain the search query refinement suggestions.

108. (previously presented) The method of claim 107, where the formulating the search query refinement suggestion further comprises:

sorting the obtained search query refinement suggestions based on a relevance score assigned to each of the search result documents corresponding to the search documents in the query-document associations associated with the named clusters and a number of the search documents in the named clusters.

109. (previously presented) The method of claim 108, further comprising:

presenting the sorted search query refinement suggestions to a user.

110. (previously presented) The method of claim 108, further comprising:

augmenting the sorted search query refinement suggestions with supplemental queries that include one or more of the terms of the search query and negated forms of all terms appearing in the set of search query refinement suggestions, but not appearing in the search query; and

presenting the augmented search query refinement suggestions to a user.

111. (previously presented) A system comprising:

means for storing a plurality of query-document associations, each query-document association including a one-to-one pairing of a search query and a search document retrieved based on the search query;

means for receiving a search query;

means for identifying a set of search result documents using the received search query;

means for identifying search result documents in the identified set of search result documents that match one or more of the stored search documents;

means for forming a plurality of clusters based on the stored search documents that match search result documents in the identified set of search result documents;

means for selecting at least one of the plurality of clusters;

means for identifying, for a search result document of the selected at least one of the plurality of clusters, a search query of a query-document association of the plurality of query-document associations that corresponds to the identified search result document; and

means for formulating a search query refinement suggestion for the received search query based on the identified search query.

112. (previously presented) A method, performed by one or more server devices, the method comprising:

creating, by one or more processors of the one or more server devices, a query source reference, including:

identifying, by one or more processors of the one or more server devices, associations between issued search queries and retrieved search documents in a one-to-one relation, and

assigning, by one or more processors of the one or more server devices, a weight to each of the associations;

receiving, by one or more processors of the one or more server devices, a search query;

forming, by one or more processors of the one or more server devices, a plurality of clusters based on the query source reference;

selecting, by one or more processors of the one or more server devices, at least one of the plurality of clusters; and

formulating, by one or more processors of the one or more server devices, a refinement suggestion for the received search query using the at least one of the plurality of clusters.

113. (previously presented) The method of claim 112, further comprising:

obtaining at least one search result document using the received search query,

where the formulating the search query refinement suggestion further comprises:

comparing the at least one search result document to the retrieved search documents,

identifying the retrieved search documents that match the at least one search result document, and

using the issued search queries associated with the identified search documents in the formulating.

114. (previously presented) The method of claim 113, where the formulating the search query refinement suggestion further comprises:

computing term vectors using terms in the issued search queries associated with the identified search documents and the assigned weights.

115. (currently amended) The method of claim 114, where the formulating the search query refinement suggestion further comprises:

ranking the search query refinement suggestion based on the computed term vectors,

where the method further comprises:

presenting the ranked search query refinement suggestion to a user.

116. (canceled)

117. (canceled)

118. (previously presented) The computer-readable memory device of claim 95, further comprising one or more instructions to cause the at least one processor to:

normalize the term vectors; and

form clusters of the identified search documents based on distances of each of the normalized term vectors from a common origin

identify search documents of the search query-search document associations that match the at least one of the search result documents; and

use the issued search queries, associated with the issued search documents, in the formulating.

119. (previously presented) The computer-readable memory device of claim 118, further comprising one or more instructions to cause the at least one processor to:

assign weights to the search query-search document associations in the database based on relevancies of the search documents to the issued search queries in the search query-search document associations; and

store the weights.

120. (canceled)

121. (canceled)

122. (canceled)

123. (previously presented) The system of claim 94, where the means for formulating the search query refinement suggestion includes:

means for identifying search documents of the search query–search document association that match the at least one search result document within the database; and

means for using the issued search queries associated with the identified search documents in the formulating.

124. (previously presented) The system of claim 123, further comprising:

means for assigning weights to the search query-search document associations in the database based on relevancies of the search documents to the issued search queries in the search query-search document associations; and

means for storing the weights in the database.

125. (previously presented) The system of claim 111, further comprising:

means for using the search queries associated with the identified query-document associations in the formulating.

126. (previously presented) The system of claim 125, further comprising:

means for assigning weights to the stored query-document associations based on relevancies of the search documents to the search queries in the query-document associations; and

means for storing the assigned weights.

127. (new) A system comprising:

a memory; and

a processor to:

store, in the memory, search query-search document associations, each search query-search document association representing a one-to-one pairing of an issued search query and a search document retrieved based on the issued search query;

receive a search query;

identify a set of search result documents using the received search query;

form a plurality of clusters of search documents, of the stored search query-search document associations, that match the identified set of search result documents;

select at least one of the plurality of clusters; and

formulate a search query refinement suggestion based on an issued search query of a search query-search document association associated with a search document of the selected at least one of the plurality of clusters.

128. (new) The system of claim 127, where the processor is further to:

assign weights to the search query-search document associations in the database based on relevancies of the search documents to the issued search queries in the search query-search document associations; and

store the weights.

129. (new) The system of claim 128, where, when formulating the search query refinement suggestion, the processor is further to:

compute term vectors using terms in the issued search queries of the search query-search document associations and the assigned weights.

130. (new) The system of claim 129, where, when formulating the search query refinement suggestion, the processor is further to:

normalize the term vectors; and

form the clusters based on distances of each of the normalized term vectors from a common origin.

131. (new) The system of claim 130, where, when formulating the search query refinement suggestion, the processor is further to:

multiply, by a constant, those of the normalized term vectors that include constituent terms with the received search query to downwardly weight the constituent terms to produce an independence of the clusters from the terms of the received search query.

132. (new) The system of claim 130, where the processor is further to:

assign a relevance score to the at least one search result document,

where, when formulating the search query refinement suggestion, the processor is further to:

rank the clusters based on the relevance score and a number of identified search documents in the clusters.

133. (new) The system of claim 132, where, when selecting at least one of the clusters, the processor is further to:

select at least one of the clusters based on the ranking.

134. (new) The system of claim 133, where, when formulating the search query refinement suggestion, the processor is further to:

compute a centroid for each of the selected clusters; and

determine a score for each unique search query in the selected at least one of the clusters based on the centroids.

135. (new) The system of claim 134, where, when computing the score for each of the unique search queries, the processor is further to:

multiply a frequency of the issued search queries in the search query-search document associations in the selected at least one of the clusters times a length of a distance vector measured from the term vectors of the issued search queries in the search query-search document associations to the centroids of the selected at least one of the clusters.

136. (new) The system of claim 134, where, when formulating the search query refinement suggestion, the processor is further to:

designate a name to each of the selected at least one of the clusters based on the computed scores of the unique search queries of the selected at least one of the clusters.

137. (new) The system of claim 136, where, when formulating the search query refinement suggestion, the processor is further to:

compare the computed scores of the unique search queries of the named clusters to a threshold; and

select those cluster names with the computed score that exceeds the threshold to obtain the search query refinement suggestions.

138. (new) The system of claim 137, where, when formulating the search query refinement suggestion, the processor is further to:

sort the obtained search query refinement suggestion among a group of search query refinement suggestions based on a relevance score assigned to each of the search result documents corresponding to the identified search documents associated with the named clusters and a number of the identified search documents in the named clusters to obtain a sorted set of search query refinement suggestions.

139. (new) The system of claim 138, where the processor is further to:

present the sorted search query refinement suggestions to a user.

140. (new) The system of claim 138, where the processor is further to:

augment the sorted set of search query refinement suggestions with supplemental queries that include one or more of the terms of the search query and negated forms of all terms appearing in the set of search query refinement suggestions, but not appearing in the search query; and

present the augmented search query refinement suggestions to a user.